Observations of Comet a 1890 (Brooks) made at the Royal Observatory, Greenwich.

(Communicated by the Astronomer Royal.)

The observations were made with the East or Sheepshanks Equatorial, aperture 6·7 inches, by taking transits over two cross-wires at right angles to each other, and each inclined 45° to the parallel of declination. Power 60.

Comet a 1890 (Brooks).

Greenwich Mean Solar Time.		Observer.	☄−✱ R.A.	Corr. for Refraction.	☄−✱ N.P.D.	Corr. for Refraction.	No. of Comp.	Apparent R.A.	Log. factor of Parallax.	Apparent N.P.D.	Log. factor of Parallax.	Comp. Star.
d	h m s		m s	s	′ ″	″		h m s		° ′ ″		
June 26	10 6 55·2	H.	+2 5·5	0·0	+ 2 53·1	0·0	4	15 14 13·7	9·4116	26 14 7·5	0·2121*n*	*a*
	10 18 54·5	„	−1 13·8	0·0	−12 22·2	−0·2	2	15 14 11·9	9·4790	26 14 17·0	0·1955*n*	*b*
	10 18 54·5	„	−2 46·4	0·0	−12 23·1	−0·2	2	15 14 12·1	9·4790	26 14 15·6	0·1955*n*	*c*
27	10 25 17·6	T.	+0 14·4	0·0	+ 2 18·8	0·0	5	...	9·5532	...	0·1298*n*	*d*
	10 25 17·6	„	+0 30·4	0·0	+ 2 5·3	0·0	5	...	9·5532	...	0·1298*n*	*e*
30	10 21 37·6	H.	−0 17·8	0·0	+ 3 32·2	0·0	6	14 44 48·3	9·6259	28 2 3·7	9·9026*n*	*f*
	10 36 48·4	„	+5 23·3	0·0	−13 46·4	−0·2	2	14 44 43·7	9·6704	28 2 9·8	9·8195*n*	*g*
Aug. 4	10 13 13·6	H.	−1 21·4	0·0	− 1 8·0	0·0	2	...	9·7105	...	0·6923	*h*
	10 21 9·0	„	−0 57·2	0·0	+ 7 11·4	+0·2	4	...	9·7100	...	0·7038	*i*
	10 29 4·3	„	−3 25·0	0·0	+ 2 45·0	+0·1	2	13 8 23·8	9·7095	45 37 17·5	0·7153	*j*
15	10 25 41·0	T.	+1 35·2	0·0	− 3 31·8	−0·3	3	...	9·6677	...	0·7926	*k*
	10 28 24·1	„	−0 37·9	0·0	− 3 13·5	−0·2	5	13 2 39·1	9·6662	49 37 25·9	0·7954	*l*
	10 32 28·6	„	−0 57·3	0·0	+ 4 20·4	+0·3	2	...	9·6641	...	0·7995	*m*

Assumed Mean Places of Comparison Stars.

	Star's Name.	R.A. 1890·0. h m s	N.P.D. 1890·0. ° ′ ″	Authority.
a	B.D. + 63°, No. 1178	15 12 5·91	26 11 25·5	Bonn Observations, vol. vi.
b	Oeltz. Arg. (N), 15292	15 15 23·21	26 26 50·4	Oeltz. Arg. (N).
c	Oeltz. Arg. (N), 15312	15 16 56·07	26 26 49·8	" "
d	B.D. + 63°, No. 1168	15 5 51	26 37	Bonn Observations, vol. v.
e	B.D. + 63°, No. 1170	15 6 39	26 38	" " "
f	B.D. + 62°, No. 1368	14 45 4·15	27 58 44·2	" " vol. vi.
g	Groombridge, 2146	14 39 18·63	28 16 9·1	Greenwich Ten-Year Catalogue.
h	B.D. + 44°, No. 2257	13 9 41	45 39	Bonn Observations, vol. v.
i	B.D. + 44°, No. 2256	13 9 18	45 31	" " "
j	B.D. + 44°, No. 2264	13 11 48·58	45 34 43·3	" " vol. vi.
k	B.D. + 40°, No. 2622	13 0 57	49 40	" " vol. iv.
l	W.B. (2) XIII. 4	13 3 18·00	49 40 48·4	Weisse's Bessel (2).
m	Anonymous			

The observations are corrected for refraction, but not for parallax.
The initials T. and H. are those of Mr. Thackeray and Mr. Hollis respectively.

S S 2

Two Auxiliary Tables for the Solution of Kepler's Problem.
By A. Marth.

If e denotes the eccentricity, ϵ and μ the eccentric and mean anomaly, the multiplication of Kepler's equation

$$\epsilon - \mu = e \sin \epsilon \text{ by } \frac{\sin(\epsilon-\mu)}{\epsilon-\mu}$$

gives the equivalent equation

$$\tan \epsilon = \frac{\sin \mu}{\cos \mu - e \cdot \dfrac{\sin(\epsilon-\mu)}{\epsilon-\mu}}.$$

But

$$\frac{\sin(\epsilon-\mu)}{\epsilon-\mu} = \frac{\sin(e \sin \epsilon)}{e \sin \epsilon}$$

$$= 1 - \frac{e^2 \sin^2\epsilon}{6} + \frac{e^4 \sin^4\epsilon}{120} - \frac{e^6 \sin^6\epsilon}{5040} + \frac{e^8 \sin^8\epsilon}{362880} - \frac{e^{10} \sin^{10}\epsilon}{39916800} + \ldots$$

$$= 1 - e^2 \sin^2\epsilon \cdot \nu$$

if

$$\nu = \frac{1}{6}\left(1 - \frac{e^2 \sin^2\epsilon}{20} + \frac{e^4 \sin^4\epsilon}{840} - \frac{e^6 \sin^6\epsilon}{60480} + \frac{e^8 \sin^8\epsilon}{6652800} - \ldots\right)$$

Hence

$$\tan \epsilon = \frac{\sin \mu}{\cos \mu - e + e^3 \cdot \sin^2\epsilon \cdot \nu}.$$

This is the formula which I considered the most suitable for finding tan ϵ, and which would have appeared in the paper published on p. 511 of the last number of the *Monthly Notices*, accompanied by the first of the following tables, had not some doubts, which I may be allowed to explain, induced me to make some alterations in the proof-sheet and to defer the publication of the table.

Not having had, or having missed, the opportunity of seeing Oppolzer's table in vol. 50 of the *Denkschriften* of the Vienna Academy till shortly before the last meeting of the Royal Astronomical Society, I was surprised to find that his table, giving the values of

$$\log \frac{E-M}{\sin(E-M)} \text{ or } \log \lambda$$

for solving Kepler's equation in the form

$$tg\,(E-M) = \frac{e \sin M}{\lambda - e \cos M},$$